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EXAMINER	
MORRISON, JAY A	
ART UNIT	PAPER NUMBER
2168	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/830,211	GE ET AL.	
	Examiner	Art Unit	
	Jay A. Morrison	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. Claims 1-48 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aboulnaga et al. ('Aboulnaga' hereinafter) ("Building XML statistics for the hidden web", by Ashraf Aboulnaga and Jeffrey F. Naughton, Proceedings of the 28th VLDB

Conference,Hong Kong, China, 2002) in view of Chan et al. ('Chan' hereinafter) (Publication Number 2004/0260683) and further in view of Chaudhuri et al. ('Chaudhuri' hereinafter) (Publication Number 2004/0236762).

As per claim 1, Aboulnaga teaches

A method comprising the computer-implemented steps of: (see abstract and background)

gathering statistics about XML resources that are stored in a ... repository; (building statistics for XML data, section 1.2)

storing said statistics; (using statistics in future means they must be stored, section 1.2)

"and in response to a request for access to one or more XML resources from said ... repository, computing a computational cost associated with each of one or more methods of accessing said one or more XML resources from said ... repository, based on said statistics." (use statistics about past queries to selectivity of future queries, section 1.2; statistics used in estimating the selectivity of future Xpath queries, abstract)

Aboulnaga does not explicitly indicate "based on said XML resources ... wherein said statistics characterize a structure of nodes, within a hierarchical structure in which said XML resources are logically organized, under each of one or more particular paths in said hierarchical structure".

However, Chan discloses "based on said XML resources ... wherein said statistics characterize a structure of nodes, within a hierarchical structure in which said

XML resources are logically organized, under each of one or more particular paths in said hierarchical structure" (statistics of xml tree patterns and subtrees, paragraphs [0033]-[0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga and Chan because using the steps of "based on said XML resources ... wherein said statistics characterize a structure of nodes, within a hierarchical structure in which said XML resources are logically organized, under each of one or more particular paths in said hierarchical structure" would have given those skilled in the art the tools to improve the invention by having a standard system for encoding data. This gives the user the advantage of having a common data format for data reuse and analysis.

Neither Aboulnaga nor Chan explicitly indicate "database".

However, Chaudhuri discloses "database" (database system, paragraph [0030]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "database" would have given those skilled in the art the tools to improve the invention by allowing data to be stored and accessed on a computer. This gives the user the advantage of having a non-volatile source of data.

As per claim 2, Aboulnaga teaches

said XML resources are logically organized in a hierarchy of nodes in which each node is either a container or a resource (section 3.1)

Neither Aboulnaga nor Chan explicitly indicate "and wherein the step of gathering statistics comprises gathering one or more data from a group consisting of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy."

However, Chaudhuri discloses "and wherein the step of gathering statistics comprises gathering one or more data from a group consisting of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "and wherein the step of gathering statistics comprises gathering one or more data from a group consisting of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy" would have given those skilled in the art the tools to improve the invention by improving the quality of execution plans. This gives the user the advantage of faster and more efficient queries.

As per claim 3, Aboulnaga teaches

said XML resources are logically organized in a hierarchy of nodes in which each node is either a container or a resource (section 3.1)

Neither Aboulnaga nor Chan explicitly indicate "and wherein the step of gathering statistics comprises gathering each of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of

nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy."

However, Chaudhuri discloses "and wherein the step of gathering statistics comprises gathering each of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "and wherein the step of gathering statistics comprises gathering each of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path

through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node, and a number of levels from a root node of said hierarchy, at which said specified node is organized in said hierarchy" would have given those skilled in the art the tools to improve the invention by improving the quality of execution plans. This gives the user the advantage of faster and more efficient queries.

As per claim 4,

Neither Aboulnaga nor Chan explicitly indicate "the step of storing statistics comprises storing said statistics in a relational table of a database of which said database repository is part."

However, Chaudhuri discloses "the step of storing statistics comprises storing said statistics in a relational table of a database of which said database repository is part" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of storing statistics comprises storing said statistics in a relational table of a database of which said database repository is part" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a

database system. This gives the user the advantage of generating more efficient queries.

As per claim 5, Aboulnaga teaches

XML. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "said relational table is a first relational table that is a different table than a second relational table in which said ... resources are stored in said database repository."

However, Chaudhuri discloses "said relational table is a first relational table that is a different table than a second relational table in which said ... resources are stored in said database repository" (paragraph [0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "said relational table is a first relational table that is a different table than a second relational table in which said ... resources are stored in said database repository" would have given those skilled in the art the tools to improve the invention by by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 6, Aboulnaga teaches

XML. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "said relational table is a relational table in which said ... resources are stored in said database repository."

However, Chaudhuri discloses "said relational table is a relational table in which said ... resources are stored in said database repository" (paragraph [0034]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "said relational table is a relational table in which said ... resources are stored in said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 7, Aboulnaga teaches

XML (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "the step of storing statistics comprises storing said statistics in a hierarchical index table in which said ... resources are indexed to said database repository."

However, Chaudhuri discloses "the step of storing statistics comprises storing said statistics in a hierarchical index table in which said ... resources are indexed to said database repository" (paragraphs [0038],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of storing statistics comprises storing said statistics in a hierarchical

index table in which said ... resources are indexed to said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 8,

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository" (paragraph [0030]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 9, Aboulnaga teaches

each of said XML resources is logically organized in a hierarchy of nodes and stored, in association with a location of said XML resource in said hierarchy ... XML (abstract; section 1.1)

through a particular specified path through a portion of said hierarchy. (abstract)

Neither Aboulnaga nor Chan explicitly indicate "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository".

However, Chaudhuri discloses "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 10, Aboulnaga teaches

each of said XML resources is logically organized in a hierarchy of nodes and stored, in association with a location of said XML resource in said hierarchy ... XML. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository at a terminal location of a particular specified path through a portion of said hierarchy."

However, Chaudhuri discloses "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository at a terminal location of a particular specified path through a portion of said hierarchy" (paragraphs [0038],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "in a column of a table in said database repository, and wherein an operator contained in at least one of said one or more predicates is an operator that determines whether a particular ... resource can be located in said database repository at a terminal location of a particular specified path through a portion of said hierarchy" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more

efficient queries.

As per claim 11, Aboulnaga teaches

the step of computing a computational cost comprises computing a computational cost of traversing, to locate a particular XML resource specified in said request ... XML. (abstract, section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "an index in which said ... resources are indexed to said database repository."

However, Chaudhuri discloses "an index in which said ... resources are indexed to said database repository" (paragraph [0034]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "an index in which said ... resources are indexed to said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 12,

Neither Aboulnaga nor Chan explicitly indicate "computing said computational cost of traversing an index comprises computing a computational cost associated with one or more CPUs used for said traversing."

However, Chaudhuri discloses "computing said computational cost of traversing an index comprises computing a computational cost associated with one or more CPUs used for said traversing" (paragraphs [0030],[0034]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "computing said computational cost of traversing an index comprises computing a computational cost associated with one or more CPUs used for said traversing" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 13,

Neither Aboulnaga nor Chan explicitly indicate "computing said computational cost of traversing an index comprises computing a computational cost associated with reading data blocks in which portions of said index are stored."

However, Chaudhuri discloses "computing said computational cost of traversing an index comprises computing a computational cost associated with reading data blocks in which portions of said index are stored" (paragraphs [0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "computing said computational cost of traversing an index comprises computing a computational cost associated with reading data blocks in which portions of

said index are stored" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 14,

Neither Aboulnaga nor Chan explicitly indicate "computing said computational cost of traversing an index comprises computing (a) a computational cost associated with one or more CPUs used for said traversing and (b) a computational cost associated with reading data blocks in which portions of said index are stored."

However, Chaudhuri discloses "computing said computational cost of traversing an index comprises computing (a) a computational cost associated with one or more CPUs used for said traversing and (b) a computational cost associated with reading data blocks in which portions of said index are stored" (paragraphs [0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "computing said computational cost of traversing an index comprises computing (a) a computational cost associated with one or more CPUs used for said traversing and (b) a computational cost associated with reading data blocks in which portions of said index are stored" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 15, Aboulnaga teaches

"XML ... XML" (section 1.1).

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises (a) computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises (a) computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository" (paragraphs [0038],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises (a) computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a

database system. This gives the user the advantage of generating more efficient queries.

As per claim 16, Aboulnaga teaches

"to one or more XML resources" (section 3.1)

Neither Aboulnaga nor Chan explicitly indicate "said request for access ... from said database repository is a SQL query."

However, Chaudhuri discloses "said request for access ... from said database repository is a SQL query" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "said request for access ... from said database repository is a SQL query" would have given those skilled in the art the tools to improve the invention by using a standardized query language for access. This gives the user the advantage of more portability and usability across a multitude of platforms and tools.

As per claim 17, Aboulnaga teaches

each of said XML resources is logically organized in a hierarchy of nodes and stored, in association with a location of said XML resource in said hierarchy ... XML, (abstract, section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing one possible path through said hierarchy to each of said ... resources."

However, Chaudhuri discloses "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing one possible path through said hierarchy to each of said ... resources" (paragraph [0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing one possible path through said hierarchy to each of said ... resources" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 18,

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from said request, that contain an operator in conjunction with said mechanism acting on said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from

said request, that contain an operator in conjunction with said mechanism acting on said database repository" (paragraphs [0030],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from said request, that contain an operator in conjunction with said mechanism acting on said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 19, Aboulnaga teaches

each of said XML resources is logically organized in a hierarchy of nodes and stored, in association with a location of said XML resource in said hierarchy ... XML, (abstract, section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing all possible paths through said hierarchy to each of said ... resources."

However, Chaudhuri discloses "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing all possible paths through said hierarchy to each of said ... resources" (paragraph [0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "in a column of a table in said database repository, and wherein said SQL query comprises a mechanism for providing all possible paths through said hierarchy to each of said ... resources" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 20,

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from said request, that contain an operator in conjunction with said mechanism acting on said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from said request, that contain an operator in conjunction with said mechanism acting on said database repository" (paragraphs [0030],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises computing a computational cost component for one or more predicates, from said request, that contain an operator in conjunction with said mechanism acting on said database

repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 21,

Neither Aboulnaga nor Chan explicitly indicate "said database repository is part of a relational database management system."

However, Chaudhuri discloses "said database repository is part of a relational database management system" (paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "said database repository is part of a relational database management system" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 22,

Neither Aboulnaga nor Chan explicitly indicate "a computer-readable medium carrying one or more sequences of instructions which, when executed by one or more processors, causes the one or more processors to perform the method recited in claim 1. "

However, Chaudhuri discloses "a computer-readable medium carrying one or more sequences of instructions which, when executed by one or more processors, causes the one or more processors to perform the method recited in claim 1" (paragraph [0023]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "a computer-readable medium carrying one or more sequences of instructions which, when executed by one or more processors, causes the one or more processors to perform the method recited in claim 1" would have given those skilled in the art the tools to improve the invention by having a non-volatile copy of the instructions. This gives the user the advantage of not losing the instructions when the system loses power.

As per claims 23-37,

These claims are rejected on grounds corresponding to the arguments given above for rejected claim 22 above, respectively, and are similarly rejected.

As per claim 38, Aboulnaga teaches

A method comprising the computer-implemented steps of: (see abstract)

gathering, ... , statistics about XML resources; (building statistics for XML data, section 1.2)

Aboulnaga does not explicitly indicate "wherein said statistics characterize a structure of nodes, wherein a hierarchical structure in which said XML resources are logically organized, under each of one or more particular paths in said hierarchical structure".

However, Chan discloses "wherein said statistics characterize a structure of nodes, wherein a hierarchical structure in which said XML resources are logically organized, under each of one or more particular paths in said hierarchical structure" (statistics of xml tree patterns and subtrees, paragraphs [0033]-[0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga and Chan because using the steps of "wherein said statistics characterize a structure of nodes, wherein a hierarchical structure in which said XML resources are logically organized, under each of one or more particular paths in said hierarchical structure" would have given those skilled in the art the tools to improve the invention by having a standard system for encoding data. This gives the user the advantage of having a common data format for data reuse and analysis.

Neither Aboulnaga nor Chan explicitly indicate "by a database management system ... that are stored in a repository of said database management system ... and storing said statistics in said database management system."

However, Chaudhuri discloses "by a database management system ... that are stored in a repository of said database management system ... and storing said

statistics in said database management system" (create statistics is a command for building statistics which are stored, paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "by a database management system ... that are stored in a repository of said database management system ... and storing said statistics in said database management system" would have given those skilled in the art the tools to improve the invention by improving the quality of execution plans. This gives the user the advantage of faster and more efficient queries.

As per claim 39, Aboulnaga teaches

the step of storing comprises storing said statistics as an XML data type. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "in a schema-based table in said database management system."

However, Chaudhuri discloses "in a schema-based table in said database management system" (paragraph [0034]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "in a schema-based table in said database management system" would have given those skilled.in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more

efficient queries.

As per claim 40, Aboulnaga teaches

said XML resources are logically organized in a hierarchy of nodes in which each node is either a container or a resource, (section 3.1)

and wherein the step of gathering statistics comprises gathering each of a total number of nodes in said hierarchy that are accessible via a path through a specified node, a total number of containers in said hierarchy that are accessible via a path through said specified node, a total number of nodes in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under a level of said specified node, and a total number of containers in said hierarchy that are accessible via a path through said specified node and that are in a level of said hierarchy that is immediately under said level of said specified node. (sections 4 through 4.2)

As per claim 41,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 22 and is similarly rejected.

As per claim 42, Aboulnaga teaches

A method comprising the computer-implemented steps of: (see abstract)

in response to a request for access to one or more XML resources (queries of XML based Internet query processors, section 1.1)

statistics about the structure of a hierarchy in which said one or more XML resources are logically organized; (statistics structure that stores annotated path expressions and information, abstract)

and computing a computational cost associated with each of one or more methods of accessing said one or more XML resources from said ... repository, based on said statistics. (use statistics about past queries to selectivity of future queries, section 1.2; statistics used in estimating the selectivity of future Xpath queries, abstract)

Aboulnaga does not explicitly indicate "wherein said statistics characterize a structure of nodes under each of one or more particular paths in said hierarchical structure".

However, Chan discloses "wherein said statistics characterize a structure of nodes under each of one or more particular paths in said hierarchical structure" (statistics of xml tree patterns and subtrees, paragraphs [0033]-[0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga and Chan because using the steps of "wherein said statistics characterize a structure of nodes under each of one or more particular paths in said hierarchical structure" would have given those skilled in the art the tools to improve the invention by having a standard system for encoding data. This gives the user the advantage of having a common data format for data reuse and analysis.

Neither Aboulnaga nor Chan explicitly indicate "from a database repository within a database management system, accessing, from said database management system ... database".

However, Chaudhuri discloses "from a database repository within a database management system, accessing, from said database management system ... database" (create statistics is a command for building statistics which are stored, paragraph [0028]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "from a database repository within a database management system, accessing, from said database management system ... database" would have given those skilled in the art the tools to improve the invention by allowing data to be stored and accessed on a computer. This gives the user the advantage of having a non-volatile source of data.

As per claim 43,

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository" (paragraphs [0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 44, Aboulnaga teaches

XML. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises computing a computational cost of traversing, to locate particular ... resources specified in said request, an index in which said ... resources are indexed to said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises computing a computational cost of traversing, to locate particular ... resources specified in said request, an index in which said ... resources are indexed to said database repository" (paragraph [0030],[0034]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises computing a computational cost of traversing, to locate particular ... resources specified in said

request, an index in which said ... resources are indexed to said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 45, Aboulnaga teaches

XML. (section 1.1)

Neither Aboulnaga nor Chan explicitly indicate "the step of computing a computational cost comprises (a) computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository."

However, Chaudhuri discloses "the step of computing a computational cost comprises (a) computing a selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository" (paragraphs [0030],[0034],[0035]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "the step of computing a computational cost comprises (a) computing a

selectivity value for each of one or more predicates, from said request, that contain operators on said database repository and (b) computing a computational cost of traversing, to locate a particular ... resource specified in said request, an index in which said ... resources are indexed to said database repository" would have given those skilled in the art the tools to improve the invention by tracking query statistics on a database system. This gives the user the advantage of generating more efficient queries.

As per claim 46,

his claim is rejected on grounds corresponding to the arguments given above for rejected claim 22 and is similarly rejected.

As per claim 47, Aboulnaga teaches

A database system comprising: (see abstract)

an XML data repository; (XML-based Internet, section 1.1)

and a query optimizer that receives a ... query and, in response to said query, formulates a query execution plan based on computational costs of access paths associated with XML data stored in said repository, (use statistics about past queries to selectivity of future queries, section 1.2; statistics used in estimating the selectivity of future Xpath queries, abstract)

wherein said computational costs are based on statistics (statistics structure that stores annotated path expressions and information, abstract).

Aboulnaga does not explicitly indicate "characterizing an organizational structure of nodes under each of one or more particular paths of an organizational structure of said XML data".

However, Chan discloses "characterizing an organizational structure of nodes under each of one or more particular paths of an organizational structure of said XML data" (statistics of xml tree patterns and subtrees, paragraphs [0033]-[0037]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga and Chan because using the steps of "characterizing an organizational structure of nodes under each of one or more particular paths of an organizational structure of said XML data" would have given those skilled in the art the tools to improve the invention by having a standard system for encoding data. This gives the user the advantage of having a common data format for data reuse and analysis.

Neither Aboulnaga nor Chan explicitly indicate "within a relational database management system ... database".

However, Chaudhuri discloses "within a relational database management system ... database" (database system, paragraph [0030]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Aboulnaga, Chan and Chaudhuri because using the steps of "within a relational database management system ... database" would have given those skilled in the art the tools to improve the invention by allowing data to be

stored and accessed on a computer. This gives the user the advantage of having a non-volatile source of data.

As per claim 48,

This claim is rejected on grounds corresponding to the arguments given above for rejected claim 1 and is similarly rejected.

Response to Arguments

Applicant's arguments regarding Chaudhuri not teaching XML data, XML resources, or other XML elements, filed 1/19/2007 have been fully considered but they are not persuasive. It is respectfully submitted that Chaudhuri is not relied upon to teach the XML elements of the invention as argued by the Applicant, but teaches statistics stored in a relational table (paragraph [0028]). In the Office Action dated 10/16/06, 'XML' is removed from the parts that Chaudhuri is shown to teach and Aboulnaga is relied upon to teach the XML elements.

Applicants arguments regarding Chaudhuri not teaching computational cost of traversing an index, it is respectfully submitted that Chaudhuri teaches a cost estimation module (paragraph [0030]) and building histograms where a multi-column covering index can replace the sequential scan (paragraph [0035]), which teaches the claimed limitation. Again, Chaudhuri is not relied upon to teach the XML part so the limitation and Aboulnaga teaches those elements.

Applicant's remaining arguments with respect to claims 1-48 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record, listed on form PTO-892, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay A. Morrison whose telephone number is (571) 272-7112. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on (571) 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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